

include the limitations of the base claim and any intervening claims. Original claim 4 has been combined with original claim 1 and submitted herein as new claim 21. Likewise, original claim 13 has been combined with original claim 10 and submitted herein as new claim 22. Therefore, new claims 21 and 22 are now in condition for allowance. No new matter has been added by this amendment.

The sole drawing has been amended to correct the items set forth by the Examiner. In particular, the 'frame 12' has been labeled and the 'pressure sensors 48,50' have been labeled with a 'P'.

Claims 3 and 12 were rejected under 35 USC 112 second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regards as the invention. In order to reduce the issues, claims 3 and 12 have been canceled.

Claims 1,9,10 and 17 were rejected under 35 USC 103 as being unpatentable over Suzuki et al. The Examiner states that Suzuki et al. discloses a work machine having a hydraulic system that comprises all of the features of the rejected claims except that the independent metering valves are an assembly. The Examiner further states that it is well known to combine a plurality of valves into a valve block assembly for the purpose of ease of assembly of the system and that it would be obvious to combine the plurality of valves of Suzuki et al. into a valve block assembly for the purpose of ease of assembly of the system. Applicants respectfully disagree with the Examiner. In independent claim 1, Applicants are claiming the use of an independent metering valve assembly in a hydraulic system to control more than one hydraulic function. The independent metering valve assembly claimed in claim 1 is generally like that disclosed in US patent 5,960,695 which is controlling only one hydraulic function. There is no teaching in Suzuki et al. that would suggest combining valves 126 and 127 into one valve assembly. Even if one would combine valves 126 and 127 of Suzuki et al. into one valve assembly, it would not operate in the manner claimed herein. In particular, the valve 126 controls all of the flow from the pressure source 15 prior to the flow reaching the valve 127. In the subject claims, and more particularly amended independent claims 1 and 17, the single, independent metering valve assembly controls flow from the inlet that is connected to the pressure source to the respective first and second outlets that are

connected to associated first and second load functions. Likewise, as claimed in the amended independent claims 1 and 17, the single, independent metering valve assembly of the subject invention has a third outlet connected to a tank. The reference to Suzuki et al. does not teach or suggest a single, independent valve assembly having an inlet and first, second, and third outlets connected with respective first and second separate load functions and a tank. Claims 9 and 10 have been canceled to reduce the issues.

Claims 1,5-10, and 14-19 were rejected under 35 USC 103 as being unpatentable over Izumi et al. The Examiner states that Izumi et al., Figs 8 and 21, discloses a work machine having a hydraulic system comprising all of the elements claimed in the rejected claims except that the independent metering valves are not an assembly and that the pressure sensors are not part of the assembly. The Examiner further states that it would have been obvious to combine the plurality of valve blocks of Izumi et al. into a valve block assembly and to make the pressure sensors part of the valve block assembly for the purpose of ease of assembly of the system. Applicants respectfully disagrees with the Examiner. The valves 100 and 101 of Izumi et al. are a general form of independent metering valves. When each of the pilot valves 120,121,122,123 of Izumi et al. are electrically controlled as taught in Fig. 21 thereof, each of the valves 100 and 101 become a form of an independent metering valve similar to that claimed in independent claims 1 and 17. It is further recognized from a review of Fig. 8 that each of the valves 100 and 101 is controlling only one load function. There is no teaching or suggestion within Izumi et al. that would lead one to use either of the valves 100 or 101 to control more than one load function. Likewise, there is no teaching or suggestion in Izumi et al. that would lead one to pick individual valves from the illustrated valve assemblies 100 and 101 to make another valve that would function as claimed herein. Therefore, Applicants believe that amended independent claims 1 and 17 are each allowable over Izumi et al.

Claims 5-7 and 18 and 19 each add additional limitation and when taken in combination with the claim or claims from which they depend are allowable over the art of record.

Claims 1-3, 9-12, and 17 were rejected under 35 USC 103 as being unpatentable over Lubbers et al. in view of Crull et al. The Examiner states that Lubbers et

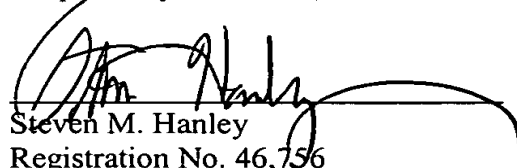
al. discloses a work machine having a hydraulic system comprising all of the elements of the rejected claims except that it does not disclose a second independently and electronically controlled valve and that the first outlet is not connected to a fan motor. The Examiner states that Crull et al. teaches a hydraulic system comprising a pump connected to a power steering system and a brake system and that the pump is also connected to a fan motor by a second independently and electronically controlled fan valve. The Examiner further states that it would have been obvious to combine the teaching of Crull et al. with that of Lubbers et al. Applicants do not disagree with what is taught in either Lubbers et al. or Crull et al. However, Applicants do disagree with the obviousness of attempting to pick and choose certain valves from two different patents, combine them as a valve assembly in a particular manner, and connect them in a particular fashion. Again, there is no teaching or suggestion in either of the noted references that would lead one to attempt such an exercise. Based on the arguments set forth above with respect to Izumi et al. and the arguments herein, Applicants believes that independent claims 1 and 17 are allowable over the references cited.

Claims 2 and 3 add additional limitations and when taken in combination with the claim or claims they depend from are allowable over the art of record. Claims 9-12 have been canceled to reduce the issues.

In view of the above, it is clear that the references cited do not singularly or in combination teach or make obvious the invention claimed herein.

It is respectfully urged that the subject application is in condition for allowance and allowance of the application at issue is respectfully requested.

Respectfully submitted,



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**Marked Up Copy of Amendments pursuant to 37 CFR 1.121**

Title: INDEPENDENT METERING VALVE ASSEMBLY FOR MULTIPLE HYDRAULIC LOAD FUNCTIONS

Application No. 09/836,751

Attorney Docket No. 00-143

**In the Claims**

1. (Amended) A hydraulic system, comprising:  
a hydraulic pressure source;  
a tank;  
a first hydraulic load associated with a first load function;  
a second hydraulic load associated with a second load function; and  
[an] a single, independent metering valve assembly including a plurality of independently and electronically controllable valves operatively disposed between the hydraulic pressure source, the tank, and the first and second load functions, said single, independent metering valve assembly [including] having an inlet fluidly coupled with said pressure source, a first outlet fluidly coupled with said first hydraulic load, [and] a second outlet fluidly coupled with said second hydraulic load, and a third outlet coupled with the tank.
3. Please cancel.
5. (Amended) The hydraulic system of claim 1, wherein said plurality of controllable valves [including] includes a first controllable valve [associated with] disposed between said first hydraulic load and the hydraulic pressure source and includes a pair of controllable valves [associated with] disposed between said second hydraulic load and the hydraulic pressure source and the tank.
6. (Amended) The hydraulic system of claim 5, including [a tank, the first controllable valve being coupled between said pressure source and said first hydraulic

load and] a second controllable valve coupled between said first hydraulic load and said tank, and said pair of controllable valves including a third controllable valve coupled between said pressure source and said second hydraulic load and a fourth controllable valve coupled between said second hydraulic load and said tank.

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17. (Amended) A method of operating a hydraulic system, comprising the steps of:

providing [an] a single, independent metering valve assembly including a plurality of independently and electronically controllable valves, said single, independent metering valve assembly including an inlet, a first outlet, [and] a second outlet, and a third outlet;

fluidly coupling said inlet with a pressure source;

fluidly coupling said third outlet with a tank;

fluidly coupling said first outlet with a first hydraulic load associated with a first load function;

fluidly coupling said second outlet and said third outlet with a second hydraulic load associated with a second load function;

controlling said single independent metering valve assembly to control flow from said pressure source through each of said inlet, said first outlet, [and] said second outlet, and said third outlet.

18. (Amended) The method of claim 17, including the steps of:

[providing a tank;]

providing a controllable valve coupled between said pressure source and said first hydraulic load;

providing a pair of controllable valves including a controllable valve coupled between said pressure source and said second hydraulic load and a controllable valve coupled between said second hydraulic load and said tank; and

[said controlling step being carried out using] controlling said first controllable valve and said pair of controllable valves to control the flow of fluid through said inlet, said first outlet, said second outlet, and said third outlet.

19. (Amended) The method of claim 18, including the steps of:

providing a second controllable valve coupled between the first hydraulic load and the tank.

20. (New) The method of claim 18, wherein the step of providing a pair of controllable valves includes the steps of:

providing a third controllable valve coupled between said pressure source and said second hydraulic load and providing a fourth controllable valve coupled between said second hydraulic load and said tank.

21. (New) A hydraulic system, comprising:

a hydraulic pressure source;

a first hydraulic load associated with a first load function;

a second hydraulic load associated with a second load function, the second hydraulic load including a pair of brakes;

an independent metering valve assembly including a plurality of independently and electronically controllable valves, said independent metering valve assembly including an inlet fluidly coupled with said pressure source, a first outlet fluidly coupled with said first hydraulic load, and a second outlet fluidly coupled with said second hydraulic load; and

an adjustable valve controlling an amount of flow from said second outlet to each of said brakes.

22. (New) A work machine, comprising:

a frame;

a hydraulic system carried by said frame, said hydraulic system including:

a hydraulic pressure source;

a first hydraulic load associated with a first load function;

a second hydraulic load associated with a second load function, the second hydraulic load including a pair of brakes;

an independent metering valve assembly including a plurality of independently and electronically controllable valves, said independent metering valve assembly including an inlet fluidly coupled with said pressure source, a first outlet fluidly coupled with said first hydraulic load, and a second outlet fluidly coupled with said second hydraulic load; and

an adjustable valve controlling an amount of flow from said second outlet to each of said brakes.